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Title:

Use of telemedicine in the European penitentiaries: current scenario and best practices

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Abstract

Background: Telemedicine has demonstrated to improve access and quality of health services in underserved area, curtailing the costs, therefore its application to the delivery of health care in prison would be desirable. Little is known about its use across European penal institutions. Our study aimed to assess the state of telemedicine within the European jails.

Methods: To maximize data availability we used two different approaches. A bottom-up approach was used by gathering information directly from prison directors of every single penal establishment of the 28 European members. A top-down approach was used to collect information from persons involved in prison administration or project leaders at national level. In both approaches questions were sent by mail.

Results: Information gathered directly by contacting prison directors and/or persons in charge come from all the 28 EU members. In total, we contacted 211 prison directors and 116 persons in charge, with a total response rate of 67%. We have found that telemedicine, as additional healthcare delivery model, is used only in 11 countries, especially among members of Northern and Western Europe. Only Romania showed to have a pilot project for a nationwide program of telemedicine.

Conclusions: Telemedicine services among European penitentiaries appear still poorly developed. Given the numerous and demonstrated advantages of this technology, it would be desirable to implement its utilization in penal healthcare and to integrate it in the routine services, as benefit not only for prison environments but also for the whole community of each country.

Keywords:

Telemedicine; prison healthcare; Europe; survey.

Introduction

Prison health is a critical public health issue in many Countries, since "It is increasingly being recognized that good prison health is good public health" (Dr. Nata Menabde Deputy Regional Director, WHO Regional Office for Europe) and a very large number of inmates requiring health assistance is registered worldwide. [1] The confinement in jails is burdened with several problems, especially for health and financial sectors. The recent growth of inmate population aggravates both, and unfortunately, as reported by the Committee of Ministers of the Council of Europe [2], prison overcrowding is a common problem for most of the European penitentiary administrations. According to the report issued by the Council of Europe on 29 April 2014, European States are still failing to significantly reduce it. [3] Overcrowding is a risk for mental and physical health of prisoners, and at the same time, it makes harder to guarantee a proper healthcare for every inmate. This is damaging for both the prison environments and the whole community since the prisoners, who are healthy on entry, have a considerable risk of leaving prison with HIV, tuberculosis, drug problem or poor mental health. [4, 5] Many diseases have a higher prevalence within the prison environment in comparison to the general population, especially infectious diseases and mental disorders. [6-14] Consequently, the demand for care is considerably greater than it is for the general population. In the UK and in Belgium, prisoners require medical consultations, on average, three-four times more often than a demographically equivalent population in the community. [15] However, despite the healthcare given to prisoners should be equivalent to that obtained outside prison, currently the majority of prisoners receive a standard of health care very far below the one afforded to patients in the community or hospital, with the risk to increase the rates of morbidity and mortality in the prison population. [16-18] Several barriers need to be overcome in health care delivery to prisoners related to numerous logistical and practical problems in providing care to people who have lost their liberty. When treatment of prisoners

is provided by the public health service, often it is necessary the transfer of patients from penitentiary to public hospitals and this could be problematic and increase the health expenditure for logistic and public safety reasons, in a context already characterized by a shortage of resources. [20, 21] Therefore, it seems desirable to improve the quality of prison healthcare without increase the costs. Telemedicine is a possible solution to facilitate the delivery of health care services where the cess was otherwise problematic. [22] As reported in literature, the main benefit of telemedicine is the great potential to provide cost-effective, high quality and accessible health care services. [23,24] In the penitentiary setting, telemedicine can be also used when inmates have doubtful health issues, by providing a quickly and inexpensively second opinion from experts. [25] This avoids additional costs such as transportation and security measures achieving good satisfaction among the users. [26-28] Several studies were performed to help prisons and health services in producing a model for partnership in the delivery of health care in penal establishments. They included models whereby local and Sanitary System augment prison health care through telemedicine. [29-31] In the USA, for instance, use of telemedicine started in July 1997 with pulmonary, orthopaedics, diabetic, and dermatology offerings, and currently telemedicine is a key part of an integrated and successful health care system for inmates. [31-36] In Europe this should be recommended, as problems of health and shortage of resources in prisons were described on the last report of the European Prison Observatory. [37] To review and monitor the benefits of telemedicine at national and regional level, the World Health Organization (WHO) established the Global Observatory for e Health (GOe). GOe have already conducted two global surveys about e-Health and telemedicine in Europe. According to the findings, telemedicine in Europe is gaining year-by-year more and more success in delivering care between hospital and patients, but nothing it is known about its utilization in the European

prison. The aim of this paper is to investigate the current situation of telemedicine utilization among the European correctional facilities.

Methods

This survey was intended to inspect how many countries among the 28 EU members use the telemedicine services, as providing healthcare method in prisons.

Data collection process

To maximize the availability of the data we used two different and complementary approaches. We used a bottom-up approach, by searching for e-mail addresses of every single penal establishment of the 28 European Countries, and by asking for information directly to the prison director. A top-down approach was used to collect information from different persons in charge of prison healthcare at national level. The approaches are explained in the flowchart illustrated in Figure 1.

At local level, for every country we sought e-mail addresses of each single penitentiary using the most commonly used search engines (Google, Yahoo), by typing the following keywords: e-mail address OR list [name of country]" "prison*", "penitentiary", "jail",; "list of prisons/penitentiaries[name of country]"; "correctional facilities [name of country]".

Additionally, or when it was not possible to achieve the e-mail addresses of the penitentiary (because the site was no more available, not updated or just incomplete) another source of information was used. At national level, we sought the e-mail address of the person in charge on the official websites of Ministry of Justice and Penitentiary System, when available, as well as on the official website of the WHO-Europe section for prison health and different European associations and organizations. Furthermore, the responsible of the prison sanitary system, ministry of Health or Justice, or the main supervisor of official associations were also contacted by e-mail.

Investigation and data extraction.

The interview was sent by e-mail and it was structured as follows:

"Do you have implemented a telemedicine service in the prisons of your Country?" and if yes, "What kind of telemedicine services do you have? Please describe it at best."

Data collection and extraction was performed by AV under the supervision of MRG and FB.

Information on the number of penitentiaries, the contact persons, the type of answers (telemedicine service yes/no) and the type of service if available were retrieved.

Data were reported for each European Union (EU) area, according the United Nation Statistic Division division.

Results

The data were collected for all the 28 EU members.

From November 2014 to April 2015, a total of 327 contact persons answered the interview questions, with a response rate of 67%. Of these, 211 were directors of prison establishments and 116 person in charge at national level. For Eastern Europe, we have answers from 17 persons in charge and 33 directors of penitentiaries, with a response rate of 71% and 55 % respectively. For Western Europe, we have found 38 persons in charge and 47 directors of prison establishments, with a response rate of 89% and 83%. A total of 81 person in charge and 102 directors of prison were reached for Northern Europe (response rates 59% and 69%, respectively). For Southern Europe, 32 persons in charge and 29 directors of prison answered, with a response rate of 69% and 72%, respectively.

Finally, only 11 of the 28 countries in the EU declared to use telemedicine services as healthcare delivery method for penitentiaries (Figure 2). Among these users, Romania is the only country that reported to have a nationwide program of telemedicine for its use within the correctional facilities, even if at the moment it is a pilot project.

Respondents from all the remaining 16 countries have declared they did not have these kind of services. Among them, only 3 have stated their interest in telemedicine implementation for the future.

About the utilization of these services, several differences emerge among the users, but the common point is that all the projects are isolated and independently established by single initiative.

The most commonly service is tele radiology (5 countries have it) followed by tele psychiatry and tele-ECG, used by 4 countries. Just 2 countries use tele dermatology, and one has tele assistance for diabetes care (Table 1). Some of the responders gave spontaneously further information about their own experience in utilization of telemedicine services, and the best experiences are reported in the following paragraph.

Best Practices

Among the users, we hereby report some of which stand out for best practices.

For instance, within the Korydallos prison, in Greece, it has been referred a well-organized and multiservice application of telemedicine. There is an ophthalmological suite, a dental suite and a microbiology laboratory, a two-bed intensive care facility and a pharmacy. Everything is connected through routers and switches to the nearby hospital, to have real-time contact with medical staff. In France, 18 telemedicine applications have been surveyed in prisons. Among these, seven are active, 11 are currently in phase of activation. Among these 18 applications, 8 are in psychiatry, 7 in dermatology, 4 in cardiology, 4 in diabetes, and there are also applications dedicated to the treatment of infectious diseases, addictions and orthopaedic issues (one application can take care of several pathologies/specialties). Within the Dordecht prison, in the Netherlands there is a project of teledermatology since 2008. It started at the beginning as a pilot project and after the pilot year, teledermatology is now an integral part of the medical services in Dordecht prison. After several meetings with providers

of telemedicine, ICT department and the provider of GP care, it has been decided to include this type of care through the Forensic Medical Society Utrecht (FMMU). The firm KSYOS, an accredited provider of telemedicine, supplies its products to the FMMU and this is in turn supplier to the detention centre. In the run up to the start, KSYOS gave training to GPs and nurses. These were mainly use the camera, the quality of the photos, the loading of photos and fill in the consultation form. An economic assessment and a survey among practitioners and detainees to evaluate the financial impact of tele dermatological consultation in comparison to the regular visit to the dermatologist revealed its manifold advantages,

In Romania, we have observed the only project made at national level to the implementation of telemedicine as a nationwide prison healthcare service. After it has been recognized the difficulties inside of National Prison Administration and the advantages of using the telemedicine services, it was planned to start a pilot project in its implementation.

The project started in the North-West region, and continued involving the Southeast one with Bucarest. The development of this project has been structured in three major steps: Planning, Project starting, Project sustainment. The planning step consisted in:

1a. *Elaboration of business and financial impact*: Objective analysis of the current situation regarding the actual medical care system form, telecommunication infrastructures, legislation and the target group (inmates).

1b. *Choosing technology*: Evaluation of the available tools and services of telemedicine and the choice of the most advantageous in the light of the needs which emerged from the above analysis.

1c. *Telecommunication services negotiation*: Evaluation of the leasing or purchasing option for the technological tools, and choice of the telecommunication services provider.

The starting of the project foresaw the following elements:

2a. *Training of the medical staff:* After the preliminary assessment, we proceeded with the training of medical staff in the Prison Hospital for being able to work with telemedicine. For this, in each unit involved in this project, "implementation teams" have been formed, made by the medical staff (doctors and nurses) and IT specialists. They collaborated directly with American specialist, such as the Foundation Health Through Walls, the Plastic Surgery Clinic from The University Hospital Saint Elizabeth - Nebraska and others, with both theoretical and material support

2b. *Institutional support*: Coordination of the involved units by a local leader in medicine care, with the possibility of developing other applications (distance training, continuous training of medical staff)

2c. *Data gathering and evaluation*: Screening of health status of prisoners. A correct evaluation can help to calibrate the project and to assess its efficacy in the long term.

The next step was aimed to identify the necessary issues to sustain the project in the long run: the project maintenance coordination, the continuous medical staff training, the permanent development of technical support, standard improvements, protocols and guides in telemedicine field.

For preventing situation of emergency due to lack of specialists in some medical domains, it has been asked and obtained the support of the Emergency Unit from the Emergency County Clinic Hospital Târgu – Mureş, connected with all the involved units.

Discussion

This survey aimed to assess the utilization of telemedicine health services among the European penitentiaries. As shown by our results, there is still a poor utilization of telemedicine services in the European penitentiaries, despite its potential benefits and the technical maturity of the various applications. Where projects are active, they are on small-scale, not integrated into routine of healthcare system, and then the global offer is highly

fragmented. We could observe a complete absence of any nationwide policy specifically created to incentivize, to regulate the use of telemedicine in the penal establishments, and to give common guidelines. In some countries, this policy is present but it has the aim to promote and regulate the telemedicine services designated to serve general population, with only mentions about its use in prisons. In the view of these findings, we can make some remarks. First, it would be recommendable to create a net of communication among the users. A common database, accessible for all, could be created, in order to record all the data concerning utilization of the services. This would also allow users to compare experiences and exchange information. Furthermore, it would be advantageous to draw the attention in monitoring systematically the services, revealing strengths and weaknesses, in order to modify and improve them according the feedback received by the users. Since the use of telemedicine in prison appears a source of undoubted and manifold advantages, it is therefore substantial to understand what could be the possible barriers that obstacle its widespread application. Not surprisingly, to capitalize on the potential of ICTs is also a WHO recommendation for Member States. [22] One first step suggested is to creation national agencies to coordinate telemedicine and eHealth initiatives, ensuring they are appropriate to local contexts, cost-effective, consistently evaluated, and adequately funded as part of integrated health service delivery. Ultimately, telemedicine projects should strengthen, rather than compete with, the other health services.

Besides the most common benefits cited, as improved security, personnel safety, costs savings, and access to specialists, the most common barriers observed were costs of technology, resistance from medical personnel, lack of staff technical expertise, and difficulties coordinating services.

It is meaningful reasoning about the causes. Despite the great potential could have the use of certain new technology, with an emerging new approach the healthcare community may be

reluctant to introduce the change and to adopt novel practices. As regards the costs, according to an analysis made by the American Pew Charitable Trust, three factors in particular are driving up state prison health-care costs: aging inmates, a prevalence of physical and mental illness and the costly nature of delivering health care to a prison's inmates. Moreover, when detainees are deemed to be a danger of public risk, security has to be provided during the transfer at the civilian hospital where they are sent. In addition to the costs of security personal, this could mean to provide contentious practices such as handcuffing or shackling prisoners to their hospital beds, practices condemned to be 'inhuman and degrading' by the European Committee for the Prevention of Torture (CPT). We have also to take into account that ensuring proper healthcare within the prison environment is essential not only for ethical and for human rights, but also for the health of the whole community. Prisoners come from and usually return to the community. People already infected with - or at high risk of – disease, which moves to penitentiary institutions and back into civil society without effective treatment and follow-up, increase the risk of the spread of communicable diseases both within and beyond the penitentiary system. People with mental illness, which in prisons is one of the most frequent diseases, could be of danger for the community if it does not receive an appropriate treatment. As above-mentioned, moving prisoners for health care consultations and for minor treatment have implications: it is expensive, it should be dangerous for public safety, and it can discourage the continuity of care for the inmates. For these reasons telemedicine approaches to consultation and minor treatment it should be suggested, also in the light of the favourable results reported by several studies upon it.

These telemedicine-enabled care delivery models have the potential to reduce the costs of healthcare, improve its quality, and attenuate professional shortages. However, a lot of work remains to do before the benefits of telemedicine-based care delivery models could be enter as routine services in the healthcare system. Change is intrinsically risky, but it is of primary

importance to take the risk when this means have the opportunity to create innovations that lead to higher quality and more cost-effective prison medical assistance. This assumes greater relevance considering that health care problems in prison are topical not only for penitentiary systems in European countries but also for the whole community. In this framework, it would be desirable to strengthen initiatives among the health practitioners, in order to improve knowledge on this topic and overcome the factors that are obstacles for a widespread use of telemedicine technology.

Penitentiaries health must be an integral part of the public health system of any country.

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Conflict of interests

The Authors declare they have no conflict of interests.

Keypoints

1. Telemedicine in European penitentiaries is still poor developed.
2. Nevertheless, some examples of good practices exist but they should be strengthened.
3. Efforts are worth to be done to encourage its use for the delivery of health care in prison settings.

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Figure 1: Flow chart of bottom-up/top-down collection data process

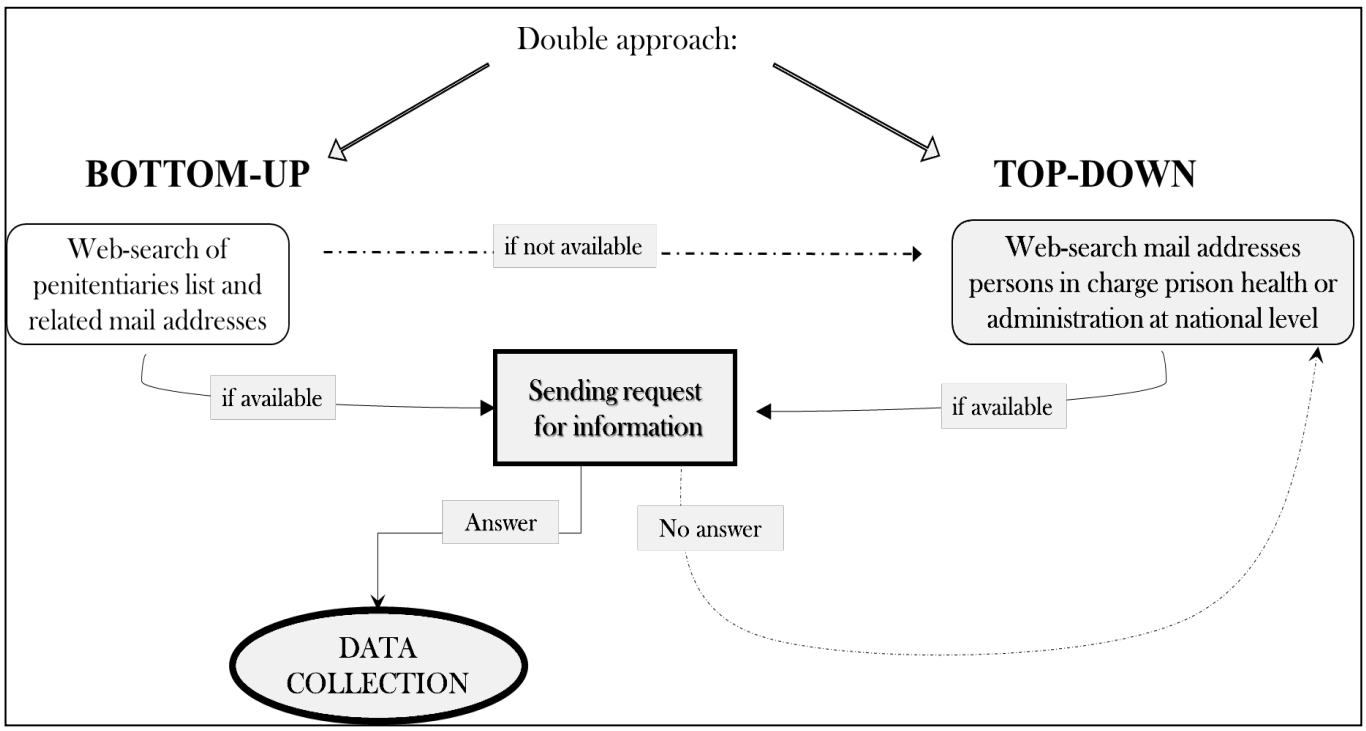

Table 1. Number and type of telemedicine services in Europe

	NORTH	SOUTH	WEST	EAST	TOT (N=28)
Number of Countries	4 (50%)	3 (37%)	3 (50%)	1 (16.6%)	11 (39%)

Type of telemedicine services	Teleradiology Telepsicology Tele-ecg	Teleradiology Telepsychiatry Telecardiology Tele-ecg	Telepsychiatry Teledermatology Telecardiology Diabetes Assistance	Telepsychiatry Teleradiology

Figure 2. Overview of use of telemedicine services in penitentiary setting by country